

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Appeal No. (not yet assigned)	: Confirmation No. 4196
	:
Examiner: Michael R. Zecher	:
	: METHOD OF CHARACTERIZING
In Re Application of	: FINANCIAL BENEFITS BASED UPON
	: INPUT OPERATIONAL PARAMETERS
Joel Woodcock	: HAVING UNCERTAINTIES
	:
Serial No. 10/763,127	: Group Art Unit: 3691
	:
Filed: January 22, 2004	: Attorney Docket No. NSD2003-001

APPELLANTS' BRIEF ON APPEAL

October 14, 2008

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This is an Appeal from the final rejection of the Examiner mailed May 14, 2008, rejecting Claims 1-10 of the above-captioned application. The claims involved in the appeal are set forth in Appendix 1, which is attached hereto.

Real Party In Interest

The real party in interest is Westinghouse Electric Company LLC, sixty-seven percent owned by Toshiba Corporation, twenty percent owned by the Shaw Group, Inc., ten percent owned by Kazatomprom, and three percent owned by IHI Corporation. An assignment from the inventors to Westinghouse Electric Company LLC was recorded on June 4, 2004, and is recorded at Reel/Frame 014691/0948.

Related Appeals and Interferences

There are no prior and pending appeals, interferences or judicial proceedings known to Appellants or the Appellants' legal representative, which may be related to, directly affect, or be directly affected by or have a bearing on the Board's decision in the pending appeal.

Status of Claims

Claims 1-10 stand rejected.

Claims 1-10 are being appealed.

Status of Amendments

There have been no amendments filed subsequent to final rejection. The claims as they stand on Appeal are contained in the Appendix 1 to this Brief.

Summary of Claimed Subject Matter

The application relates to a method that allows various sets of activities, such as maintenance or other activities that may be performed as to a facility such as a nuclear power plant or other facility, to be evaluated in order to enable choices to be made among various sets of activities based upon Net Present Value of savings to the facility.

More specifically, and as is recited in independent Claim 1, the sole independent claim, the application relates to a method of characterizing a number of potential financial benefits (page 7, line 13) to a facility (page 5, lines 10-11 and 18-21). Each potential financial benefit results from the potential performance of one of a number of groups of possible activities (page 5, lines 9 and 14-18) on the facility. The method comprises determining a number of goals (page 5, lines 22-23 and page 6, lines 12-18, and Fig. 6 at #8), the achievement or partial achievement of which would affect a financial status (page 5, lines 19 and 23) of the facility. The method further comprises identifying (page 5, line 23 and page 6, line 12, and Fig. 6 at #12) for each goal a corresponding group of activities (page 5, lines 9 and 14-18, and Fig. 6 at #12), each identified activity affecting (page 5, line 24 and page 6, line 20) in some fashion achievement of the goal. The method further comprises, for each group of activities, determining a probability distribution (which is sometimes represented in the application by a probability density function) on net present savings (page 5, line 25 and lines 29-32; page 7, lines 9-18; page 7, line 29 through page 8, line 8; and Fig. 5) that corresponds with implementation of the group of activities.

Grounds of Rejection to be Reviewed on Appeal

Claims 1-3 and 7-10 are rejected under 35 U.S.C. §102(b) as being unpatentable over Klimasauskas (USPN 6,110,214). Claims 4-6 are rejected under 35 U.S.C. §103(a) as being unpatentable over Klimasauskas in view of Gray (US 2003/0093347). Review of all of these grounds of rejection is requested.

Argument

Rejection of Claims 1-3 and 5-7 Under 35 U.S.C. §102(b) Over Klimasauskas (USPN 6,110,214)

Claim 1

It is submitted that Klimasauskas fails to disclose all of the elements of Claim 1. In this regard, it is noted that Claim 1 recites “[a] method of *characterizing* a number of potential benefits” (emphasis added) that comprises, among other steps, “for each group of activities, determining a *probability distribution on net present savings* that corresponds with implementation of the group of activities” (emphasis added). It is submitted that Klimasauskas is directed toward optimization rather than *probabilistic modeling*. That is, Klimasauskas is directed toward a system that identifies an optimum set of maintenance activities rather than *characterizing* with a probability distribution on net present savings an implementation of a set of maintenance activities.

The distinction is significant. The system of Klimasauskas is directed toward point analysis (Klimasauskas at column 19, lines 15-22) to identify and output what is considered to be an optimized set of activities, i.e., “the solution with the smallest objective function is output to the user before the routine of FIG. 12 is terminated” (Klimasauskas at column 20, lines 3-5). The “solution” in Klimasauskas is a particular set of maintenance activities, meaning that the “solution” is a listing of the activities that are suggested by the system as being optimal. Klimasauskas includes no disclosure whatsoever of *characterizing* for a set of maintenance activities a probability distribution on net present savings, as is recited in Claim 1. Again, Klimasauskas is directed solely toward optimization, i.e., the identification of an optimum set of activities, rather than *probabilistic modeling* with respect to a set of activities.

The Examiner concedes at page 10, lines 1-3 of the Final Office Action mailed May 14, 2008, that Klimasauskas is directed toward the identification of *optimal* activities. However, the Examiner points out that Klimasauskas states at column 1, line 14 that its field of endeavor is the “modeling and optimizing” of maintenance, and the Examiner

infers from this that modeling and optimizing are two different endeavors and that such “modeling” is tantamount to the *probabilistic modeling* with which the present application is concerned. Applicants would strongly disagree and would point out that in the stated “modeling and optimizing” of Klimasauskas, the “modeling” is an input in order to achieve as a result an optimization of maintenance. Klimasauskas is in not in any fashion whatsoever related to *probabilistic modeling* as an output, such as through the characterization of a set of maintenance activities in terms of a probability distribution on Net Present Value of savings, which is the subject matter of the present application.

The Examiner points to column 20, lines 45-56 of Klimasauskas as providing support for the Examiner’s contention that Klimasauskas discloses “for each group of activities, determining a probability distribution on net present savings that corresponds with implementation of the group of activities” as is recited in Claim 1. Applicant would respectfully disagree. The indicated passage of Klimasauskas is directed solely toward optimization of *compiled computer code* which, in the indicated passage, involves an improved logical loop comprising eleven (11) instructions as opposed to other versions that are less efficient and require thirteen (13) or more instructions. That is, this passage indicates how to reduce computing requirements of a repetitively-performed routine by reducing the quantity of instructions in the loop that must be executed. The indicated passage has nothing whatsoever to do with any particular groups of activities or the determination of a probability distribution on net present savings for a group of activities.

The Examiner asserts page 10, lines 10-13 of the Final Office Action mailed May 14, 2008, that the concept of “improved current performance” by reducing the quantity of instructions in compiled computer code “anticipates probabilistic modeling”. Applicants would strongly disagree and would point out that the mere fact that something can be improved says nothing with respect to *probabilistic modeling* through the characterization of subject matter in terms of a *probability distribution on Net Present Value of savings* as in the current application.

Claim 2

Klimasauskas includes no disclosure of, for each operational parameter, characterizing the parameter both based upon an assumption of baseline activity and based upon an assumption of implementation of a group of activities, as is recited in Claim 2. The Examiner points to Claim 1 of Klimasauskas as providing support for the Examiner’s contention that Klimasauskas contains such a disclosure. Applicant would respectfully disagree and would point out that Claim 1 is merely directed toward a method of modeling

a maintenance task comprising collecting input parameters, generating derived variables, and applying a primary analyzer to the parameters and variables to generate outputs. Claim 1 of Klimasauskas has nothing whatsoever to do with characterizing operational parameters both based upon an assumption of baseline activity and based upon an assumption of implementation of a group of activities as is recited in Claim 2.

The Examiner asserts at page 11, line 1 of the Final Office Action mailed May 14, 2008, that the mention in Claim 1 of Klimasauskas of “one or more activities” constitutes a disclosure of “characterizing parameters both based on a single or baseline activity and a group of activities”. As the skilled person would readily understand, however, the use of the word “or” in the expression “one or more” in Claim 1 of Klimasauskas indicates that the two indicated elements are at best being asserted in the *alternative* sense. Thus, the Examiner’s attempted application of Claim 1 of Klimasauskas to Claim 2 of the instant application is erroneous since Claim 1 of Klimasauskas is incapable of anticipating the recited characterizing of operational parameters both based upon an assumption of baseline activity and based upon an assumption of implementation of a group of activities since the word “or” in the expression “one or more” in Claim 1 of Klimasauskas can refer at best only to one of the two in the alternative, i.e., either one or the other, but not both, which is arguable an opposite concept to the *conjunctive* recitation of Claim 2.

Claim 3

The Examiner takes the position that column 19, lines 15-38 of Klimasauskas disclose “wherein the said performing a plurality of probabilistic simulation sampling trials includes performing a plurality of Monte Carlo trials”, as is recited in Claim 3. Applicant would respectfully disagree. While Klimasauskas mentions “Monte Carlo”, it is noted that such “Monte Carlo” operations are described as being an alternative to Dynamic Hill Climbing (DHC), which is itself directed toward an “optimization process” (Klimasauskas, column 19 at line 22) using point analysis. The “Monte Carlo” mentioned in Klimasauskas is thus not for the purpose of “performing a plurality of *probabilistic simulation* sampling trials” (emphasis added) as is recited in Claim 3, and rather is merely employed for the purposes of performing point analysis.

Claim 7

Since Claim 7 depends indirectly from Claim 1, it is submitted that Klimasauskas fails to recite all of the elements of Claim 7.

Claim 8

Since Claim 8 depends indirectly from Claim 1, it is submitted that Klimasauskas fails to recite all of the elements of Claim 8.

Claim 9

The Examiner takes the position that column 21, lines 15-24 of Klimasauskas discloses “identifying for each goal a set of activities which together comprise a strategy for achieving the corresponding goal”, as is recited in Claim 9. Applicant would respectfully disagree. The indicated passage is directed merely toward statements that the description in Klimasauskas of the data that is collected with respect to a semiconductor plant is representative only, and that variables, optimization goals, and variable limits can be changed as needed. The passage has nothing whatsoever to do with identifying a number of activities which together comprise a *strategy* for achieving a corresponding goal.

The Examiner argues at page 11, line 22 through page 12, lines 1-3 of the Final Office Action mailed May 14, 2008, that Klimasauskas “teaches that goals and variables may be changed to suit a particular process or strategy” (emphasis added). Applicant would point out, however, that the relevant portion of the indicated passage of Klimasauskas (column 21, lines 22-24) of states, “goals and variable limits can be changed to suit the particular process of interest”, and states nothing whatsoever that is suggestive of anything having to do with a “strategy”, the arguments of the Examiner notwithstanding.

Claim 10

The Examiner points to column 9, line 65 through column 10, line 12 of Klimasauskas as providing support for the Examiner’s contention that Klimasauskas discloses “wherein the activities of at least one of the sets of activities together have a synergy” as is recited in Claim 10. Applicant would respectfully disagree. The indicated passage of Klimasauskas is directed solely toward the selection of candidate transformations in a derivation of variables, and no interconnection is indicated as existing among the transformations or among the variables. The passage has nothing whatsoever to do with the selection of various activities that together have a synergy.

The Examiner takes the position at page 12, lines 9-11 of the Final Office Action mailed May 14, 2008, that the expression “synergy is defined as the combined action of two or more substances or agencies to achieve an effect *greater than that of which each is individually capable*” (emphasis added). The Examiner goes on to argue at page 12, lines

14-15 of the Final Office Action that Klimasauskas anticipates the “synergy” recited in Claim 10 since a teaching of Klimasauskas “suggests that selecting to transform more than one variable achieves a more efficient process.” Applicants would argue, however, that the Examiner’s position that “more than one . . . achieves a more efficient process” merely refers to *cumulative* gains and nothing more, which is a concept directly at odds with the Examiner’s definition of “synergy” which is stated to include “an effect *greater than that of which each is individually capable*” (emphasis added), and is directly at odds with the recitation of synergy in Claim 10.

Rejection Under 35 U.S.C. §103(a) Over Klimasauskas In View of Gray
(US 2003/0093347)

Claim 4

The Examiner concedes that Klimasauskas fails to disclose the type of Monte Carlo trial recited in Claim 4. However, the Examiner takes the position that Gray discloses the generation of parameters to derive prices and values, and the Examiner points to paragraphs [0373] and [0374] as providing support for this position. It is submitted, however, that neither Klimasauskas nor Gray includes any express disclosure of the generating of random numbers, the calculating of a baseline financial effect, the discounting of a baseline financial effect to a present day baseline value, the calculating of a strategy financial effect, the discounting of a strategy financial effect to a present day strategy value, or the subtracting of a present day strategy value from a present day baseline value to determine a net presence savings amount for a trial, as is recited in Claim 4. It is submitted, however, that the Examiner’s suggestion that Gray discloses calculating and assessing the economic financial risk associated with government and monetary authorities does not constitute a disclosure in Gray of the elements recited in Claim 4.

The Examiner takes the position at page 13, lines 1-3 of the Final Office Action mailed May 14, 2008, that Gray discloses the application of a standardized Monte Carlo technique, and that the aforementioned recitations of Claim 4 amount to a standardized Monte Carlo technique since they relate to arriving at transaction values, i.e., a net savings amount. Applicants would disagree with the Examiner’s interpretation of the applied art. Moreover, Applicants would argue that the mere disclosure of subject matter in the art of record does not render obvious the concept recited in Claim 4.

The Federal Circuit has stated that “[i]t is axiomatic that a claimed invention is not obvious solely because it is composed of elements that are all individually found in the prior art.” *Life Technologies v. Clontech Laboratories*, 224 F.3d 1320, 56 USPQ2d 1186 (Fed.

Cir. 2000); MPEP §2143.01 IV (“A statement that modifications of the prior art to meet the claimed invention would have been ‘well within the ordinary skill of the art at the time the claimed invention was made’ because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references”) (emphasis in original), citing *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993). Furthermore, the Supreme Court, in *KSR International Co. v. Teleflex Inc.*, ___ U.S. ___, ___, 2007 WL 1237837 at *14 (2007) (emphasis added), stated the following with respect to the determination of obviousness under 35 U.S.C. § 103:

[A] patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. Although common sense directs one to look with care at a patent application that claims as innovation the combination of two known devices according to their established functions, *it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does*. This is so because inventions in most, if not all, instances rely on building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.

In addition, the Supreme Court further noted that:

Often, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, *all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue*. To facilitate review, this analysis should be made explicit. See *In re Kahn*, 441 F.3d 977, 988 (Fed Cir. 2006) (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinnings to support the legal conclusion of obviousness”).

Id., at ___, 2007 WL 1237837 at *14 (emphasis added). Moreover, the Supreme Court stated that the Federal Circuit’s teaching-suggestion-motivation test remains a “helpful insight” for determining obviousness. *Id.*

It is submitted that the Examiner has at most provided merely conclusory statements without an articulated reason having some rational underpinning to support the Examiner’s conclusion of obviousness. For instance, the Examiner provides the following statement regarding the asserted combination: “It would have been obvious to one of

ordinary skill in the art at the time the invention was made to combine these two features [a standardized Monte Carlo technique and its use to arrive at transaction values] in order to determine potential modifications to process variables that may improve current performance.” It is pointed out, however, that the Examiner has conceded that the subject matter of Gray at most amounts to the aforementioned application of a standardized Monte Carlo technique, and the Examiner has never even suggested that the art of record expressly discloses the generating of random numbers, the calculating of a baseline financial effect, the discounting of a baseline financial effect to a present day baseline value, the calculating of a strategy financial effect, the discounting of a strategy financial effect to a present day strategy value, or the subtracting of a present day strategy value from a present day baseline value to determine a net presence savings amount for a trial, as is recited in Claim 4. Thus the Examiner’s statement is at best merely conclusory since it doesn’t even amount to an assertion regarding a motivation with respect to the elements that are recited in Claim 4 and that are mentioned in the preceding sentence.

Claim 5

The Examiner takes the position that column 15, line 45 through column 16, line 12 of Klimasauskas disclose “characterizing the operational parameter with a probability density function” as is recited in Claim 5. Applicant would respectfully disagree. It is submitted that the disclosed and claimed concept relates to the application of classical Bayesian probability theory to generate a probability distribution. In contrast, the indicated passage of Klimasauskas is directed toward the use of fuzzy set theory in order to reflect uncertainty in data. It is submitted that the two are completely separate approaches, and it is also submitted, therefore, that Klimasauskas does not involve a probability density function as recited in Claim 5.

Claim 6

The Examiner concedes that Klimasauskas does not disclose the generation of random numbers that are distributed in accordance with a probability density function of an operational parameter, but contends that Gray provides such a disclosure. Applicant would respectfully disagree. It is submitted that Gray is directed generally toward financial analysis and includes no express disclosure of, for an operational parameter, generating random numbers over the course of a plurality of Monte Carlo trials to result in a set of values for the parameter that are distributed in accordance with the probability density function of the parameter. The Examiner again identifies paragraphs [0373] and [0374] as providing support for the Examiner’s contention, but it is submitted that such

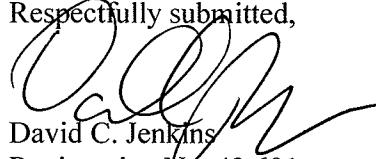
paragraphs at most are directed toward the generation of parameter values and include no disclosure whatsoever of the generation of random numbers that result in a set of values for an operational parameter that are distributed in accordance with a probability density function thereof.

The Examiner takes the position at page 14, lines 9-10 of the Final Office Action mailed May 14, 2008, that "Klimasauskas discloses that the density estimator is capable of producing, a necessarily non-differentiable, but still useful estimate" It is submitted, however, that this assertion still does not establish that the art of record includes any disclosure whatsoever of the generation of random numbers that result in a set of values for an operational parameter that are distributed in accordance with a probability density function thereof.

Summary and Conclusion

Claims 1-10 are patentable over the cited references. Therefore, it is requested that the Board reverse the Examiner's rejections of Claims 1-10 and remand the application to the Examiner for the issuance of a Notice of Allowance for Claims 1-10.

Respectfully submitted,



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APPENDIX 1 (Claims Appendix)

Claims:

1. A method of characterizing a number of potential financial benefits to a facility, each potential financial benefit resulting from the potential performance of one of a number of groups of possible activities on the facility, the method comprising:

determining a number of goals, the achievement or partial achievement of which would affect a financial status of the facility;

identifying for each goal a corresponding group of activities, each identified activity affecting in some fashion achievement of the goal; and

for each group of activities, determining a probability distribution on net present savings that corresponds with implementation of the group of activities.

2. The method of Claim 1 wherein said determining a probability distribution on net present savings that corresponds with implementation of the group of activities comprises:

determining a baseline of activity with regard to the facility;

identifying a number of operational parameters related to the facility that have an effect on the financial status of the facility, each operational parameter having an uncertainty;

for each operational parameter, characterizing the operational parameter based upon an assumption of the baseline activity, the characterized operational parameter having an uncertainty;

for each operational parameter, characterizing the operational parameter based upon an assumption of implementation of the group of activities, the characterized operational parameter having an uncertainty;

performing a plurality of probabilistic simulation sampling trials on the operational parameters that were characterized based upon the assumption of baseline activity and on the operational parameters that were characterized based upon the assumption of implementation of the group of activities;

determining a net present savings amount for each trial; and

compiling the net present savings amounts from all of the trials corresponding with the group of activities to form the probability distribution on net present savings that corresponds with implementation of the group of activities.

3. The method of Claim 2 wherein said performing a plurality of probabilistic simulation sampling trials includes performing a plurality of Monte Carlo trials.

4. The method of Claim 3 wherein each said Monte Carlo trial comprises:

for each operational parameter that was characterized based upon the assumption of baseline activity, generating a random number, the random number determining a baseline value for the operational parameter within its uncertainty;

calculating a baseline financial effect on the financial status of the facility on the basis of the baseline operational parameter values;

discounting the baseline financial effect to achieve a present day baseline value;

for each operational parameter that was characterized based upon the assumption of implementation of the group of activities, generating a random number, the random number determining a strategy value for the operational parameter within its range of uncertainty;

calculating a strategy financial effect on the financial status of the facility on the basis of the strategy operational parameter values;

discounting the strategy financial effect to a present day strategy value; and

subtracting the present day strategy value from the present day baseline value to determine the net present savings amount for the trial.

5. The method of Claim 4 wherein said characterizing the operational parameter based upon an assumption includes characterizing the operational parameter with a probability density function.

6. The method of Claim 5 wherein, for each operational parameter, the random numbers generated over the course of the plurality of Monte Carlo trials result in a set of values for the operational parameter that are distributed in accordance with the probability density function of the operational parameter.

7. The method of Claim 2 wherein at least one of the operational parameters with its uncertainty is also known to vary with time.

8. The method of Claim 7 wherein said at least one of the operational parameters is an equipment failure rate that is known to vary with time.

9. The method of Claim 1 wherein said identifying for each goal a corresponding group of activities includes identifying for each goal a set of activities which together comprise a strategy for achieving the corresponding goal.

10. The method of Claim 9 wherein the activities of at least one of the sets of activities together have a synergy.

APPENDIX 2 (Evidence Appendix)

None.

APPENDIX 3 (Related Proceedings Appendix)

None.